IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant:	Siamak Naghian
Title:	SIGNAL PROPAGATION DELAY ROUTING
Appl. No.:	10/526,565
International Filing Date:	8/11/2003
371(c) Date:	4/5/2005
Examiner:	Pablo N. Tran
Art Unit:	2618
Confirmation Number:	8011

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
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Sir/Madam:

This Appeal Brief is being filed in response to a Notification of Non-Compliant Appeal Brief mailed July 1, 2009, providing a one-month period for reply. As a result, the submission of this corrected Appeal Brief is timely filed. Under the provisions of 37 C.F.R. § 41.37, this Appeal Brief was originally filed in response to a Notice of Panel Decision from Pre-Appeal Brief Review mailed April 16, 2009, rejecting Claims 1-5, 7-21, 23-32, 35, and 36 of the above-referenced patent application (Application). Appellant does not believe that a fee is due for this filing. However, if a fee is deemed to be due, the Commissioner is hereby authorized to charge any fees which may be required for this Appeal Brief, including but not limited to fees for an extension of time under 37 C.F.R. §§ 1.136(a), or credit any overpayment, to Deposit Account No. 19-0741.

Appellant respectfully requests reconsideration of the Application.

REAL PARTY IN INTEREST

The real party in interest is Spyder Navigations L.L.C., the assignee of record, having a place of business at 1209 Orange Street, Wilmington, Delaware 19801 USA. The assignment to Spyder Navigations L.L.C. was recorded in the records of the United States Patent and Trademark Office at Reel/Frame 019833/0099 on September 17, 2007.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences that will directly affect, be directly affected by, or have a bearing on the present appeal, that are known to Appellants or Appellant's patent representative.

STATUS OF CLAIMS

The present appeal is directed to Claims 1-5, 7-21, 23-32, 35, and 36, all of which stand rejected pursuant to a Final Office Action dated October 8, 2008. Claims 1-5, 7-21, 23-32, 35, and 36 are being appealed. Claims 6, 22, 33-34 have been cancelled. Claims 1-5, 7-21, 23-32, 35, and 36 with the appropriate status reference are shown in the attached Claims Appendix.

STATUS OF AMENDMENTS

A Final Office Action dated October 8, 2008 was received by Appellants. A Notice of Appeal with a Pre-Appeal Brief was electronically filed with the US Patent and Trademark Office on December 31, 2008. A Notice of Panel Decision from Pre-Appeal Brief Review was mailed April 16, 2008, in which the rejection of Claims 1-5, 7-21, 23-32, 35, and 36 was maintained. Thus, no amendments have been made in the present Application subsequent to receipt of the Final Office Action dated October 8, 2008.

SUMMARY OF CLAIMED SUBJECT MATTER

Three independent claims, Claims 1, 21, and 31, are under appeal and argued below as a group. Additionally, dependent Claim 7 is separately argued below; dependent Claims 8, 9, and 24 are separately argued below as a group; dependent Claims 13 and 27 are separately argued below as a group; dependent Claims 14 and 28 are separately argued below as a group; dependent Claims 15 and 29 are separately argued below as a group; dependent Claim 17 is separately argued below; dependent Claim 18 is separately argued below; and dependent Claim 30 is separately argued below.

Claim 1 is directed to a method of routing a message in a network comprising a plurality of nodes. A first message is transmitted from a source node to a destination node along a plurality of paths (e.g. Abstract; Fig. 2; pg. 7, lines 10-12; pg. 9, lines 1-9). The plurality of paths includes a first path, and the first path includes a first intermediate node and a second intermediate node (e.g. Abstract; Fig. 2; pg. 1, lines 9-18; pg. 7, lines 10-12; pg. 9, lines 1-9). A first time stamp and a second time stamp are generated at the first intermediate node (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). The first time stamp corresponds to receipt of the first message at the first intermediate node (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). The second time stamp corresponds to transmission of the first message from the first intermediate node to the second intermediate node (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). A third time stamp and a fourth time stamp are generated at the second intermediate node (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). The third time stamp corresponds to receipt of the first message at the second intermediate node (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3;

pg. 12, line 28-pg. 13, line 2). The fourth time stamp corresponds to transmission of the first message by the second intermediate node (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). A propagation delay is calculated between the first intermediate node and the second intermediate node, wherein the propagation delay comprises a difference between the second time stamp and the third time stamp (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). The first path is selected from the plurality of paths for communication between the source node and the destination node based at least in part on the propagation delay (e.g. pg. 13, lines 22-31; pg. 20, lines 15-21).

Claim 7 depends from Claim 5, which depends from Claim 4, which depends from Claim 3, which depends from Claim 1. Claim 7 further comprises calculating a processing delay of the first intermediate node, wherein the processing delay comprises a difference between the first time stamp and the second time stamp, and further wherein the first path is selected based at least in part on the processing delay (e.g. pg. 8, lines 8-14; pg. 12, lines 5-11; pg. 12, line 27-pg. 13, line 2; pg. 14, lines 16-26; pg. 18, lines 16-19).

Claim 8 depends from Claim 1. Claim 8 further comprises measuring a signal quality of the first message at the first intermediate node (e.g. pg. 17, line 18-pg. 18, line 14); and selecting the first path for communication between the source node and the destination node based at least in part on the measured signal quality (e.g. pg. 19, lines 4-9).

Claim 9 depends from Claim 8, which depends from Claim 1. Claim 9 further comprises storing the measured signal quality in the first message (e.g. pg. 19, lines 7-9).

Claim 13 depends from Claim 1. Claim 13 further comprises measuring a power attribute of the first intermediate node (e.g. pg. 15, lines 6-21); and selecting the first

path for communication between the source node and the destination node based at least in part on said measured power attribute (e.g. pg. 19, lines 4-9).

Claim 14 depends from Claim 1. Claim 14 further comprises assessing a link stability of the first path (e.g. pg. 15, lines 23-31); and selecting the first path for communication between the source node and the destination node based at least in part on said assessed link stability (e.g. pg. 19, lines 4-9).

Claim 15 depends from Claim 1. Claim 15 further comprises identifying a quality of service of the first message (e.g. pg. 18, lines 21-26); and selecting the first path for communication between the source node and the destination node based at least in part on the identified quality of service (e.g. pg. 19, lines 4-9).

Claim 17 depends from Claim 1. Claim 17 further comprises using a routing algorithm to weight a parameter based on a priority value, wherein selecting the path for communication between the source node to the destination node is based at least in part on the weighted parameter (e.g. S3, Fig. 4; pg. 19, line 17-pg. 21, line 5).

Claim 18 depends from Claim 1. Claim 18 further comprises using a mapping value to determine a degree to which a measured parameter value meets a predefined parameter value (e.g. pg. 19, lines 11-15; pg. 20, lines 5-13).

Claim 21 is directed to an ad hoc wireless network. A plurality of nodes form a plurality of paths between a source node and a destination node, wherein the source node is configured to transmit a first message to the destination node along a first path of the plurality paths (e.g. Abstract; Fig. 2; pg. 7, lines 10-12; pg. 9, lines 1-9). A first intermediate node along the first path (e.g. Abstract; Fig. 2; pg. 1, lines 9-18; pg. 7, lines 10-12; pg. 9, lines 1-9). The first intermediate node is configured to generate a first time stamp corresponding to receipt of the first message at the first intermediate node and a second time stamp corresponding to transmission of the first message from the first intermediate node to a second intermediate node along the first path (e.g. pg. 8, lines 7-14; pg. 9, lines

15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). The second intermediate node is configured to generate a third time stamp corresponding to receipt of the first message at the second intermediate node (e.g. Abstract; Fig. 2; pg. 1, lines 9-18; pg. 7, lines 10-12; pg. 8, lines 7-14; pg. 9, lines 1-9; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). A selecting means is configured to select the first path from said plurality of paths for communication between said source node and said destination node based at least in part on a propagation delay between the first intermediate node and the second intermediate node (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 1, lines 9-18; pg. 12, lines 13-26; pg. 13, lines 22-31; pg. 19, lines 4-9; pg. 20, lines 15-21). The propagation delay comprises a difference between the second time stamp and the third time stamp (e.g. pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2).

Claim 24 depends from Claim 21. Claim 24 further comprises means for measuring a signal quality of the first message (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 17, line 18-pg. 18, line 14); wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on said measured signal quality (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 19, lines 4-9).

Claim 27 depends from Claim 21. Claim 27 further comprising means for measuring a power attributes of the first intermediate node (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 15, lines 6-21); wherein said selecting means is configured to select the first path for communication between the source node and the destination node based at least in

part on said measured power attribute (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 19, lines 4-9).

Claim 28 depends from Claim 21. Claim 28 further comprises means for determining a link stability of the first path (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 15, lines 23-31); wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on said link stability (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 19, lines 4-9).

Claim 29 depends from Claim 21. Claim 29 further comprises means for identifying a quality of service of the first message (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 18, lines 21-26); wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on the quality of service (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 19, lines 4-9).

Claim 30 depends from Claim 21. Claim 30 further comprises mapping means for mapping said plurality of candidate routes to a plurality of quality of service classes (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 14, lines 1-14; pg. 18, lines 21-26); wherein said selecting means is further configured to select the first path from said plurality of candidate routes based at least in part on a quality of service of the first message (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 19, lines 4-9).

Claim 31 is directed to a node in an ad hoc wireless network. Means for receiving a message transmitted from a source node along a plurality of communication

paths including a first communication path (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. transceiver; Abstract; Fig. 2; pg. 7, lines 10-12; pg. 9, lines 1-9). The first communication path includes a first intermediate node and a second intermediate node (e.g. Abstract; Fig. 2; pg. 1, lines 9-18; pg. 7, lines 10-12; pg. 9, lines 1-9). Means for identifying a first time that said message is received at the first intermediate node (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. clock; pg. 8, lines 7-14; pg. 9, line 15-pg. 10, line 2; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). Means for identifying a second time that said message is transmitted from the first intermediate node to the second intermediate node (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. clock; pg. 8, lines 7-14; pg. 9, line 15-pg. 10, line 2; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). Means for identifying a third time that the message is received at the second intermediate node, wherein the first time, the second time, and the third time are stored in a metrics field of the message (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. clock; pg. 8, lines 7-14; pg. 9, line 15-pg. 10, line 2; pg. 10, lines 13-15; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). Means for determining a propagation delay between the first intermediate node and the second intermediate node, wherein the propagation delay comprises a difference between the second time and the third time (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 8, lines 7-14; pg. 9, lines 15-20; pg. 10, line 27-pg. 11, line 19; pg. 11, line 29-pg. 12, line 3; pg. 12, line 28-pg. 13, line 2). Means for selecting the first communication path for communication with the source node based at least in part on the propagation delay (means-plus-function claim element under 35 U.S.C. § 112, sixth paragraph; e.g. network node, server, or network element; pg. 1, lines 9-18; pg. 12, lines 13-26; pg. 13, lines 22-31; pg. 19, lines 4-9; pg. 20, lines 15-21).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Ten grounds of rejection are presented for review in this appeal:

(1) The rejection of Claims 1, 21, and 31 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,744,740 to Chen *et al.* (*Chen*).

(2) The rejection of Claims 8, 9, and 24 under 35 U.S.C. § 102(e) as being anticipated by *Chen*.

(3) The rejection of Claims 13 and 27 under 35 U.S.C. § 102(e) as being anticipated by *Chen*.

(4) The rejection of Claims 14 and 28 under 35 U.S.C. § 102(e) as being anticipated by *Chen*.

(5) The rejection of Claims 15 and 29 under 35 U.S.C. § 102(e) as being anticipated by *Chen*.

(6) The rejection of Claim 7 under 35 U.S.C. § 103(a) as being unpatentable over *Chen*.

(7) The rejection of Claim 17 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 4,873,517 to Baratz *et al.* (*Baratz*).

(8) The rejection of Claim 18 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of *Baratz*.

(9) The rejection of Claim 30 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of *Baratz*.

(10) The rejection of Claims 12, 16, and 26 under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of U.S. Patent No. 6,115,580 to Chuprun *et al.* (*Chuprun*).

ARGUMENT

I. LEGAL STANDARDS

A. Standard under 35 U.S.C. 102(e)

35 U.S.C. § 102(e) provides that "a person shall be entitled to a patent unless ... the invention was described in - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the Appellant for patent." A prior art reference, as defined by 35 U.S.C. 102, is said to "anticipate" a claimed invention if each and every element of the claimed invention is disclosed, either expressly or inherently, in the prior art reference. *In re Spada*, 911 F.2d 705, 708, 15 U.S.P.Q.2d 1655, 1657 (Fed. Cir. 1990). In deciding the issue of anticipation, one must identify the elements of the claims, determine their meaning in light of the specification and prosecution history, and identify corresponding elements disclosed in the allegedly anticipating reference. *Lindemann Maschinenfabrik v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485-86 (Fed. Cir. 1984).

The Federal Circuit explained the requirements for anticipation in *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983), by stating:

> The law of anticipation does not require that the reference "teach" what the subject patent teaches. Assuming that a reference is properly "prior art," it is only necessary that the claims under attack, as construed by the court, "read on" something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or "fully met" by it.

Id. at 772, 218 U.S.P.Q. at 789.

Extrinsic evidence from those skilled in the art can be used to explain, but not to expand the meaning of a disclosed element in that single prior art reference, to determine whether the reference anticipates the claims at issue. *In re Baxter Travenol Labs.*, 952 F.2d 388, 21 U.S.P.Q.2d 1281 (Fed. Cir. 1991).

B. Standard under 35 U.S.C. 103(a)

35 U.S.C. 103(a) states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Obviousness under 35 U.S.C. 103(a) involves four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1 (1966).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. *In re Piasecki*, 745 F.2d 1468, 1471-72 (Fed. Cir. 1984).

According to M.P.E.P. § 2142,

> The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 550 U.S. at ___ , 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval).

Similarly, according to M.P.E.P. § 2143, "[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit."

According to M.P.E.P. § 706.02(j),

> 35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, the examiner should set forth in the Office action:
>
> (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,
>
> (B) the difference or differences in the claim over the applied reference(s),
>
> (C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and
>
> (D) an explanation >as to< why >the claimed invention would have been obvious to< one of ordinary skill in the art at the time the invention was made**.
>
> ** "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

According to MPEP § 2144.03(A):

> Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known.
>
> ...
>
> It is never appropriate to rely solely on “common knowledge” in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based.

According to MPEP § 2144.03(B):

> .... If such notice is taken, the basis for such reasoning must be set forth explicitly. The examiner must provide specific factual findings predicated on sound technical and scientific reasoning to support his or her conclusion of common knowledge. See *Soli*, 317 F.2d at 946, 37 USPQ at 801;

> *Chevenard*, 139 F.2d at 713, 60 USPQ at 241. The applicant should be presented with the explicit basis on which the examiner regards the matter as subject to official notice **>so as to adequately traverse the rejection< in the next reply after the Office action in which the common knowledge statement was made.

According to MPEP § 2144.03(E):

> Any rejection based on assertions that a fact is well-known or is common knowledge in the art without documentary evidence to support the examiner's conclusion should be judiciously applied. Furthermore, as noted by the court in *Ahlert*, any facts so noticed should be of notorious character and serve only to "fill in the gaps" in an insubstantial manner which might exist in the evidentiary showing made by the examiner to support a particular ground for rejection. It is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based. See *Zurko*, 258 F.3d at 1386, 59 USPQ2d at 1697; *Ahlert*, 424 F.2d at 1092, 165 USPQ 421.

II. REJECTION OF CLAIMS 1, 8, 9, 13-15, 21, 24, 27-29, and 31 UNDER 35 U.S.C. § 102(e)

In section 2 of the Final Office Action, Claims 1-5, 8-11, 13-15, 19-21, 23-25, 27-29, 31, 32, 35, and 36 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Chen*. For the reasons given below, Appellant submits that the Examiner's rejection of at least independent Claims 1, 21, and 31, and dependent Claims 8, 9, 13-15, 24, and 27-29 is improper and should be reversed.

A. Claims 1, 21, and 31

Claim 1, with emphasis added through underlining and bolding, recites in part:

> generating a first time stamp and a second time stamp at the first intermediate node, wherein the first time stamp corresponds to receipt of the first message at the first intermediate node and the second time stamp corresponds to **transmission** of the first message from the first intermediate node to the second intermediate node;
>
> generating a third time stamp and a fourth time stamp at the second intermediate node, wherein the third time stamp

> corresponds to **receipt** of the first message at the second intermediate node and the fourth time stamp corresponds to transmission of the first message by the second intermediate node;
>
> calculating a propagation delay between the first intermediate node and the second intermediate node, wherein **the propagation delay comprises a difference between the second time stamp and the third time stamp**;

Claim 21, with emphasis added through underlining and bolding, recites in part:

> a first intermediate node along the first path, wherein the first intermediate node is configured to generate a first time stamp corresponding to receipt of the first message at the first intermediate node and a second time stamp corresponding to **transmission** of the first message from the first intermediate node to a second intermediate node along the first path;
>
> the second intermediate node configured to generate a third time stamp corresponding to **receipt** of the first message at the second intermediate node; and
>
> selecting means configured to select the first path from said plurality of paths for communication between said source node and said destination node based at least in part on a propagation delay between the first intermediate node and the second intermediate node, wherein **the propagation delay comprises a difference between the second time stamp and the third time stamp**

Claim 31, with emphasis added through underlining and bolding, recites in part:

> means for identifying a first time that said message is received at the first intermediate node;
>
> means for identifying a second time that said message is **transmitted** from the first intermediate node to the second intermediate node;
>
> means for identifying a third time that the message is **received** at the second intermediate node, wherein the first time, the second time, and the third time are stored in a metrics field of the message;
>
> means for determining a propagation delay between the first intermediate node and the second intermediate node, wherein

> **<u>the propagation delay comprises a difference between the second time and the third time</u>**; and

Appellant respectfully submits that *Chen* fails to teach, suggest, or describe generating or identifying a second and a third time stamp and calculating or determining a "propagation delay" as recited in Claims 1, 21, and 31. *Chen* further fails to teach, suggest, or describe "the first time, the second time, and the third time ... stored in a metrics field of the message" as recited in Claim 31.

On pages 2 and 3 of the Final Office Action, the Examiner generally asserted that *Chen* discloses the elements of Claims 1, 21, and 31 in "fig. 12A-12D, col. 8/ln. 33-45 [and] col. 9/ln. 44 - col. 11/ln. 2." Appellant disagrees with the Examiner's interpretation of *Chen*.

Figures 12A-12D of *Chen* illustrate a plurality of nodes through which a routing path for a message is formed. Figures 12A-12D fail to disclose any use of a time in determining a "propagation delay" as recited in Claims 1, 21, and 31 or of storing a plurality of times in a metrics field of a message as recited in Claim 31.

Column 8, lines 33-45 of *Chen* cited by the Examiner state:

> To prevent loops, each time a node gets a Zone Routing Table from a neighboring node, it will store the "Source Logical ID," "Time Stamp," and the "Hops Left" in temporary memory. <u>If in the future, it receives a Zone Route Table message with the **same** "Source Logical ID" and "Time Stamp," it will check to see if "Hops Left" is more than what is stored in temporary memory</u>. If it is, then the Zone Routing Table will be updated and the message will be forwarded as before. Otherwise, the Zone Routing Table will not be updated. One will be subtracted from the "Hops Left" field. The message will simply be forwarded if "Hops Left" is greater than 0. All nodes will have a Zone Routing Table once this procedure has fully iterated.

The recited section of *Chen* again fails to disclose use of a time in determining a "propagation delay" as recited in Claims 1, 21, and 31 or of storing a plurality of times in a metrics field of a message as recited in Claim 31. Instead, *Chen* merely indicates that a single time stamp received in a "Zone Route Table" message Field (*see* Fig.

9) is stored locally at the node and used to determine if the node has already received the "Zone Route Table" message to determine the further processing of the message. It is not clear how the time stamp is generated, but the time stamp is used to indicate a unique message. The time stamp is associated with the neighboring node that sent the message though whether the time is a receipt or transmission time is never specified.

The time stamp described in *Chen* cannot be related to a time or time stamp as claimed because *Chen* teaches specifically checking to see if the same time stamp is received which clearly results in a zero propagation delay which is nonsensical. Processing in the case where the time stamp is not the same is merely used as a trigger not to update the zone routing table. *Chen*, thus, fails to disclose use of a time in determining a "propagation delay" as recited in Claims 1, 21, and 31 or of storing a plurality of times in a metrics field of a message as recited in Claim 31.

Excerpts of column 9, line 44-column 11, line 2 of *Chen*, cited by the Examiner and which reference a time stamp, state:

> .... The "stuck" node will add an entry in its "Zone Routing Table" with the destination node's Logical ID and position. It will leave the "Next-hop Node" and the "Time Stamp" entries **empty** for now. ....
>
> .... If the Path Discovery packet receiving node determines that it is the closest node to the destination node among its neighbors (in other words, the packet is "stuck" in this neighbor node as well), it will add an entry in **its Zone Routing Table** for the destination node (its ID, position, and the current time for the time stamp column for now), then forwards the **Path Discovery packet** to a few other neighbor nodes who are closest to the destination node. ....
>
> When the "Path Discovery" packets reach the destination node, the destination node will pick the most optimum path (i.e., shortest # of hops, shortest time, or some other metric), and send a "Path Update" message back to the Source Node through the picked path. A Path Update packet is shown in FIG. 14, and the packet retraces the route back to the Source node. For every node in the return route, if an entry for the destination exists in the node's Zone Routing Table, then the node updates the "Next-hop Node" with the "Sending Node

> ID," and updates the "Time Stamp" column. If an entry does not exist in the Zone Routing Table, then the node does not update its table. In either event, the node inserts its own Logical ID in the "Sending Node ID" field, moves the last "Past Node ID" into the "Next-hop Logical ID" field and send the packet to the next node in the return route. When the "Path Update" packet reaches the Source Node (the node that started the "Path Discovery"), a route would be setup to route packets out of the hole in the wireless network 14 in the future, as shown in the new path of FIG. 12D. Thus, upon a packet attempting to pass through the previous "stuck" node, that node can find the destination node in its Zone Routing Table entry and forwards the packet to the "Next-hop Node" shown in the table entry.

First, according to Fig. 14, neither the “Path Discovery” packet fields nor the “Packet Update” packet fields include a time stamp field. Thus, *Chen* again fails to disclose storing a plurality of times in a metrics field of a message as recited in Claim 31. Second, the cited section of *Chen* again fails to disclose use of a time stamp in determining a “propagation delay” as recited in Claims 1, 21, and 31. Instead, *Chen* merely indicates that a time stamp is updated locally at the node (not sent in a message) with the current time to identify a route through the node so that the message is not “stuck” at the node in the future. Thus, again, the time stamp described in *Chen* cannot be related to a time or time stamp as recited in Claims 1, 21, and 31.

Chen makes no other mention of use of a time stamp. Therefore, *Chen* only discloses use of a single time stamp received in a “Zone Route Table” message field (*see* Fig. 9). As seen in Tables 2 and 3 (example Zone Routing Tables) of *Chen*, **only a single time stamp is recorded for each node logical ID**. Accordingly, *Chen* fails to disclose **generating a first time stamp and a second time stamp** at any node.

In addition, *Chen* does not disclose a time stamp corresponding to “receipt of the first message” at a node or a time stamp corresponding to “transmission of the first message” from a node. No specific description is given in *Chen* describing exactly when the single time stamp is defined or what part of the process the time stamp represents. As

such, Appellant respectfully submits that the Examiner has disregarded the claim elements of Claims 1, 21, and 31 which explicitly recite two distinct time stamps generated at a node.

Two times are needed at a node to remove the processing delay that occurs at each node between receipt of a message from a previous node and forwarding of the message to a next node. The message is not propagating during the processing delay at a node. Therefore, any propagation delay that includes the processing delay at each node is inaccurate. To improve the accuracy of the propagation delay calculation, a receipt time at a node **and** a transmission time from the node are **both** generated. The receipt time is used to calculate the propagation delay between the previous node and the current node. The transmission time is used to calculate the propagation delay between the current node and the next node. If both the receipt time and the transmission time are not generated at each node, the propagation delay calculated necessarily includes the processing delay at each node during which the message is not actually propagating. Inclusion of the processing delays at each node in a propagation delay calculation causes errors in any distance calculated because the distance will necessarily be greater than the actual distance because the processing delay is nonzero.

A delineation between the receipt and transmission times is unnecessary in the system described in *Chen* because *Chen* does not teach calculation of a propagation delay at all. *Chen* teaches that an optimum path may be selected based on a "shortest time." (*See* col. 10, lines 47-49). *Chen* fails to provide any detail associated with the "shortest time" calculation. Therefore, *Chen* fails to teach, suggest, or describe all of the elements of at least independent Claims 1, 21, and 31.

Appellant also respectfully disagrees that "such method of time stamping is widely known in the art" as stated by the Examiner. Appellant respectfully submits that the elements asserted are not well-known and capable of instant and unquestionable demonstration as being well known as required under MPEP § 2144.03(A). Appellant

further respectfully submits that the Examiner has not explicitly provided the basis for such reasoning as required under MPEP § 2144.03(B). Appellant still further respectfully submits that the elements asserted are not of notorious character and do not "serve only to 'fill in the gaps' in an insubstantial manner" as required under MPEP § 2144.03(E). Therefore, Appellant respectfully requests that the Examiner provide support for such an assertion.

An anticipation rejection cannot properly be maintained where the reference used in the rejection does not disclose all of the recited claim elements. As a result, Appellant respectfully requests withdrawal of the rejection of Claims 1, 21, and 31. Claims 2-5, 8-11, 13-15, 19-20, 23-25, 27-29, 32, 35, and 36 depend from one of Claims 1, 21, and 31. Therefore, Appellant respectfully requests withdrawal of the rejection of Claims 1-5, 8-11, 13-15, 19-21, 23-25, 27-29, 31, 32, 35, and 36.

B. Claims 8, 9, and 24

On pages 3-4 of the Final Office Action, the Examiner states:

> As per claims 8-9 and 24, as stated above in claim 1, *Chen* further discloses measuring and stored a signal quality and selecting the path based at least in part on the measured signal quality (col. 4/ln. 40-52, col. 5/ln. 1, col. 5/ln. 46, col. 14/ln. 20-21, col. 14/ln. 34-35).

At column 4, lines 40-52 cited by the Examiner, *Chen* states:

> The system 10 first <u>selects a few nodes to be cluster heads (CH) or data sinks (DD)</u> among the member nodes. Because most of the data traffic will go through the cluster head 30, and the cluster head 30 will be calculating the relative location for all nodes in its cluster, it is <u>advantageous to choose nodes with high processing power and high-energy sources (such as AC power)</u>, such as computer 20. This selection process can be performed automatically through running a random process within each node. This random process can be designed to select the most suitable devices as the cluster heads, i.e. most processing power, best location, most energy available, highest connectivity, and the like.

(Underlining added). Thus, the cited section of *Chen* describes consideration of a high processing power and high-energy source in selecting cluster heads, but teaches nothing

whatsoever related to "selecting the first path ... based at least in part on the measured signal quality" as recited in Claims 8, 9, and 24.

Again, in describing selection of a cluster head or data sink, *Chen* states "[i]f there are several 1st layer nodes in range of a 2nd layer node, only one 1st layer node will be picked as a parent (by least depth, signal strength, load parameter, or other types of cost metric)." (Col. 5, lines 44-47). Thus, again, the cited section of *Chen* teaches nothing whatsoever related to "selecting the first path ... based at least in part on the measured signal quality" as recited in Claims 8, 9, and 24.

In determining a relative distance between neighboring nodes, *Chen* states that "[s]uch [a] determination can be done in various ways, including measuring the relative signal strength (RSSI) of signals coming from neighboring nodes, timing from DSSS signals, or using ultra wide band signals" (col. 4, line 66-col. 5, line 3). At column 14, lines 19-23 cited by the Examiner, *Chen* states:

> 9. The system of claim 1, wherein the <u>second location function</u> is one or more of triangulation, manual input, global positioning system (GPS) location, <u>received signal strength (RSS)</u>, timing from direct sequence spread spectrum (DSSS) signals, ultra wide band signals, and use of a nodes random ID.

(Underlining added). At column 14, lines 19-23 cited by the Examiner, *Chen* states: "12. [t]he system of claim 1, wherein the <u>first location function</u> is one or more of triangulation, manual input, global positioning system (GPS), and <u>received signal strength (RSS)</u>." Thus, these cited sections of *Chen* describe use of a received signal strength to determine a location of a node, but teach nothing whatsoever related to "selecting the first path ... based at least in part on the measured signal quality" as recited in Claims 8, 9, and 24. In fact, *Chen* in its entirety fails to teach anything whatsoever related to "selecting the first path ... based at least in part on the measured signal quality" as recited in Claims 8, 9, and 24.

An anticipation rejection cannot properly be maintained where the reference used in the rejection does not disclose all of the recited claim elements. Therefore,

Appellant respectfully requests withdrawal of the rejection of Claims 8, 9, and 24 for this additional reason.

C. Claims 13 and 27

On page 4 of the Final Office Action, the Examiner states:

> As per claims 13 and 27, as stated above in claim 1, *Chen* further discloses measuring power attributes and selecting the path based at least in part on the measured power attributes (col. 4/ln. 40-52, col. 7/ln. 21-31).

At column 4, lines 40-52 cited by the Examiner, *Chen* states:

> The system 10 first <u>selects a few nodes to be cluster heads (CH) or data sinks (DD)</u> among the member nodes. Because most of the data traffic will go through the cluster head 30, and the cluster head 30 will be calculating the relative location for all nodes in its cluster, it is <u>advantageous to choose nodes with high processing power and high-energy sources (such as AC power)</u>, such as computer 20. This selection process can be performed automatically through running a random process within each node. This random process can be designed to select the most suitable devices as the cluster heads, i.e. most processing power, best location, most energy available, highest connectivity, and the like.

(Underlining added). Thus, the cited section of *Chen* describes consideration of a high processing power and high-energy source in selecting cluster heads, but teaches nothing whatsoever related to "selecting the first path ... based at least in part on the measured power attributes" as recited in Claims 13 and 27.

At column 7, lines 21-31 cited by the Examiner, *Chen* states:

> Once created, the Cluster Tables can be used as a distributed database for the queries of nodes in the wireless network 14. Other procedures can be used to provide location information to the nodes without multi-hop communications and relative location calculations, such as direct wireless transmission to the cluster head 30 (no multi-hops necessary), GPS, or manual entry of location. However, the above procedure has an advantage in that it has low device overhead requirements (other than cluster heads), low transmission power requirement for individual devices, and minimum human intervention.

Thus, the cited section of *Chen* describes use of cluster tables to achieve low transmission power requirements, but teaches nothing whatsoever related to "selecting the first path ... based at least in part on the measured power attributes" as recited in Claims 13 and 27. In fact, *Chen* in its entirety fails to teach anything whatsoever related to "selecting the first path ... based at least in part on the measured power attributes" as recited in Claims 13 and 27.

An anticipation rejection cannot properly be maintained where the reference used in the rejection does not disclose all of the recited claim elements. Therefore, Appellant respectfully requests withdrawal of the rejection of Claims 13 and 27 for this additional reason.

D. Claims 14 and 28

On page 4 of the Final Office Action, the Examiner states:

> As per claims 14 and 28, as stated above in claim 1, *Chen* further discloses assessing a link stability and selecting the path based at least in part on the assessed link stability (col. 4/ln. 40-52, col. 7/ln. 21-31, col. 14/ln. 20-21, col. 14/ln. 34-35).

At column 4, lines 40-52 cited by the Examiner, *Chen* states:

> The system 10 first <u>selects a few nodes to be cluster heads (CH) or data sinks (DD)</u> among the member nodes. Because most of the data traffic will go through the cluster head 30, and the cluster head 30 will be calculating the relative location for all nodes in its cluster, it is <u>advantageous to choose nodes with high processing power and high-energy sources (such as AC power)</u>, such as computer 20. This selection process can be performed automatically through running a random process within each node. This random process can be designed to select the most suitable devices as the cluster heads, i.e. most processing power, best location, most energy available, highest connectivity, and the like.

(Underlining added). Thus, the cited section of *Chen* describes consideration of a high processing power and high-energy source in selecting cluster heads, but teaches nothing whatsoever related to "selecting the first path ... based at least in part on said assessed link stability" as recited in Claims 14 and 28.

At column 7, lines 21-31 cited by the Examiner, *Chen* states:

> Once created, the Cluster Tables can be used as a distributed database for the queries of nodes in the wireless network 14. Other procedures can be used to provide location information to the nodes without multi-hop communications and relative location calculations, such as direct wireless transmission to the cluster head 30 (no multi-hops necessary), GPS, or manual entry of location. However, the above procedure has an advantage in that it has low device overhead requirements (other than cluster heads), low transmission power requirement for individual devices, and minimum human intervention.

Thus, the cited section of *Chen* describes use of cluster tables to achieve low transmission power requirements, but teaches nothing whatsoever related to "selecting the first path ... based at least in part on said assessed link stability" as recited in Claims 14 and 28.

At column 14, lines 19-23 cited by the Examiner, *Chen* states:

> 9. The system of claim 1, wherein the <u>second location function</u> is one or more of triangulation, manual input, global positioning system (GPS) location, <u>received signal strength (RSS)</u>, timing from direct sequence spread spectrum (DSSS) signals, ultra wide band signals, and use of a nodes random ID.

(Underlining added). At column 14, lines 32-35 cited by the Examiner, *Chen* states: "12. [t]he system of claim 1, wherein the <u>first location function</u> is one or more of triangulation, manual input, global positioning system (GPS), and <u>received signal strength (RSS)</u>." Thus, these cited sections of *Chen* describe use of a received signal strength to determine a location of a node, but teach nothing whatsoever related to "selecting the first path ... based at least in part on said assessed link stability" as recited in Claims 14 and 28. *Chen*, in fact, fails to teach anything whatsoever related to a link stability.

An anticipation rejection cannot properly be maintained where the reference used in the rejection does not disclose all of the recited claim elements. Therefore, Appellant respectfully requests withdrawal of the rejection of Claims 14 and 28 for this additional reason.

E. Claims 15 and 29

On page 4 of the Final Office Action, the Examiner states:

> As per claims 15 and 29, as stated above in claim 1, *Chen* further discloses assessing a required QOS stability and selecting the path based at least in part on the assessed QOS (col. 4/ln. 40-52, col. 7/ln. 21-31, col. 14/ln. 20-21, col. 14/ln. 34-35, col. 14/l n. 28-31).

At column 4, lines 40-52 cited by the Examiner, *Chen* states:

> The system 10 first <u>selects a few nodes to be cluster heads (CH) or data sinks (DD)</u> among the member nodes. Because most of the data traffic will go through the cluster head 30, and the cluster head 30 will be calculating the relative location for all nodes in its cluster, it is <u>advantageous to choose nodes with high processing power and high-energy sources (such as AC power)</u>, such as computer 20. This selection process can be performed automatically through running a random process within each node. This random process can be designed to select the most suitable devices as the cluster heads, i.e. most processing power, best location, most energy available, highest connectivity, and the like.

(Underlining added). Thus, the cited section of *Chen* describes consideration of a high processing power and high-energy source in selecting cluster heads, but teaches nothing whatsoever related to "selecting the first path ... based at least in part on the identified quality of service" as recited in Claims 15 and 29.

At column 7, lines 21-31 cited by the Examiner, *Chen* states:

> Once created, the Cluster Tables can be used as a distributed database for the queries of nodes in the wireless network 14. Other procedures can be used to provide location information to the nodes without multi-hop communications and relative location calculations, such as direct wireless transmission to the cluster head 30 (no multi-hops necessary), GPS, or manual entry of location. However, the above procedure has an advantage in that it has low device overhead requirements (other than cluster heads), low transmission power requirement for individual devices, and minimum human intervention.

Thus, the cited section of *Chen* describes use of cluster tables to achieve low transmission power requirements, but teaches nothing whatsoever related to "selecting the first path ... based at least in part on the identified quality of service" as recited in Claims 15 and 29.

At column 14, lines 19-23 cited by the Examiner, *Chen* states:

> 9. The system of claim 1, wherein the <u>second location function</u> is one or more of triangulation, manual input, global positioning system (GPS) location, <u>received signal strength (RSS)</u>, timing from direct sequence spread spectrum (DSSS) signals, ultra wide band signals, and use of a nodes random ID.

(Underlining added). At column 14, lines 32-35 cited by the Examiner, *Chen* states: "12. [t]he system of claim 1, wherein the <u>first location function</u> is one or more of triangulation, manual input, global positioning system (GPS), and <u>received signal strength (RSS)</u>." At column 14, lines 28-31 cited by the Examiner, *Chen* states: "11. The system of claim 10, wherein the one or more performance measures include one or more of processing power, processing speed, latency, bandwidth, utilization, reliability, and cost.." Thus, these cited sections of *Chen* teach nothing whatsoever related to "selecting the first path ... based at least in part on the identified quality of service" as recited in Claims 15 and 29. *Chen*, in fact, fails to teach anything whatsoever related to a quality of service.

An anticipation rejection cannot properly be maintained where the reference used in the rejection does not disclose all of the recited claim elements. Therefore, Appellant respectfully requests withdrawal of the rejection of Claims 15 and 29 for this additional reason.

III. REJECTION OF CLAIM 7 UNDER 35 U.S.C. § 103(a)

In section 4 of the Final Office Action, Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chen*. For the reasons given below, Appellant submits that the Examiner's rejection of Claim 7 is improper and should be reversed.

Claim 7 recites "calculating a processing delay of the first intermediate node, wherein the processing delay comprises a difference between the first time stamp and the

second time stamp, and further wherein the first path is selected based at least in part on the processing delay." On page 5 of the Final Office Action, the Examiner states:

> As per claim 7, as stated above in claim 1, *Chen* disclose the method of selecting a path that has the shortest total travel time but not explicitly the message's processing delay at a node. However, it would have [sic] obvious to one of ordinary skill in the art to provide such method of calculating the propagation delay (message's travel time from one node to the other node) and processing time to *Chen* in order to select a path that has the shortest total travel time to/from a source node and destination node.

Appellant respectfully disagrees. *Chen* mentions use of a shortest time without any disclosure whatsoever describing how the shortest time is calculated or what the shortest time represents. (*See* col. 10, lines 47-49). *Chen* does not distinguish between a propagation delay, a processing delay, or a travel time. Calculation of a shortest time to or from a source node and destination node is not the same as a calculation of a propagation delay related specifically to the time the signal is propagating between nodes and a processing delay associated with the processing time at a node. *Chen*, in fact, fails to distinguish either of these components as part of a shortest time determination.

Appellant also respectfully disagrees that "such method of calculating the propagation delay (message's travel time from one node to the other node) and processing time ... to select a path that has the shortest total travel time to/from source node and destination node" is obvious as stated by the Examiner. Appellant respectfully submits that the Examiner has not presented a *prima facie* case of obviousness according to MPEP §§ 2142-43. The Examiner fails to provide "clear articulation of the reason(s) why the claimed invention would have been obvious" as required under MPEP §§ 2142-43. Appellant further respectfully submits that the Examiner has not provided "an explanation >as to< why >the claimed invention would have been obvious to< one of ordinary skill in the art at the time the invention was made," shown that *Chen* ""expressly or impliedly suggest[s] the claimed invention," or presented "a convincing line of reasoning as to why the artisan would have

found the claimed invention to have been obvious in light of the teachings of the references" as required under MPEP §§ 706.02(j).

Appellant also respectfully submits that, to the extent the Examiner is relying on Official Notice, the elements asserted are not well-known and capable of instant and unquestionable demonstration as being well known as required under MPEP § 2144.03(A). Appellant further respectfully submits that the Examiner has not explicitly provided the basis for such reasoning as required under MPEP § 2144.03(B). Appellant still further respectfully submits that the elements asserted are not of notorious character and do not "serve only to 'fill in the gaps' in an insubstantial manner" as required under MPEP § 2144.03(E). Therefore, Appellant respectfully requests that the Examiner provide support for such an assertion.

An obviousness rejection cannot properly be maintained where the reference used in the rejection does not disclose all of the recited claim elements or where the Examiner has not presented a *prima facie* case of obviousness. As a result, Appellant respectfully requests withdrawal of the rejection of Claim 7.

IV. REJECTION OF CLAIM 17-18 and 30 UNDER 35 U.S.C. § 103(a)

In section 6 of the Final Office Action, Claims 17, 18, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of *Baratz*. For the reasons given below, Appellant submits that the Examiner's rejection of Claims 17, 18, and 30 is improper and should be reversed.

A. Claim 17

On page 6 of the Final Office Action, the Examiner states:

> As per claim 17, as stated above in claim 1, *Chen* further discloses such routing algorithm (col. 2/ln. 33-50) but not explicitly the claimed limitation. *Baratz* et al. teaches such method (fig. 4, fig. 5, col. 4/ln. 48- col. 5/ln. 53).

Figs. 4 and 5 of *Baratz* include an indication of a weight. At column 4, line 47-column 6, line 34 which includes the section cited by the Examiner, *Baratz* states:

> .... The retrieved vectors are used in operation 32 to establish the weight of all routes between the origin end node and the network nodes to which that end node is connected. In operation 34, routes with infinite weights (unusable routes) are eliminated. .... The optimal routes, including their weights, are stored for later use in an operation 40.
>
> ...
>
> .... The weight of every potential route from the network nodes on the first list to the network nodes on the second list is computed in an operation 50. The algorithms employed to compute the route weights may be conventional in nature. ....
>
> .... To determine the optimal end node-to-end node route through the network, <u>the results of the separate computations are concatenated or combined</u> in an operation 54. The least weight route resulting from the concatenation is chosen in an operation 56 as the optimal end node-to-end node route through the network.
>
> Because there is a possibility that a direct end node-to-end node connection may exist, a check 58 must be made for the presence of such a connection. If such a direct connection is found, the weight assigned to the direct connection is compared to the weight of the optimal route through the network in an operation 60. If the direct connection has a lower weight than the network route, the direct connection is selected in an operation 62. However, if there is no direct connection or if the weight assigned to an existing direct connection is greater than the computed weight for the route through the network, the network route is chosen in an operation 64.
>
> FIG. 4 is a table illustrating the results of route computations within the network. The function of these computations is to select an optimal route from every network node connected to the origin end node to every network node connected to the destination end node. Since there are two network nodes, NNA and NNB, connected to the origin end node EN2 and two network nodes, NND and NNF, connected to the destination end node EN6, there will necessarily be four optimal routes within the network connecting these four network nodes. <u>The optimal routes are computed simply by **summing** the weights assigned to the nodes and transmission groups on each possible route</u>. For example, <u>the **weight assigned to a potential route** including network nodes NNA, NNB and NND</u>

> <u>is assigned a weight equal to the sum of the weights of these three nodes plus the weights assigned to the transmission groups connecting these three nodes</u>.
>
> ...
>
> The selected routes in each of the four groups appears in the table shown in FIG. 5. To complete the computation of the end node-to-end node route, the <u>weight of the optimal route between the origin end node and each of its network nodes is **combined** with the weight of the selected routes within the network</u>. For example, the <u>weight of the optimal route from origin end node EN2 to potential origin network node NNA and the weight of the optimal route from destination end node EN6 to network node NND is **added** to the weight of the optimal route between network nodes NNA and NND</u>. For the weights illustrated, the total weight of this route would have a value of 19. FIG. 5 shows that the least weight route through the network is formed over a path including the single transmission group between EN6 and network node NND, the network node NND itself, the transmission group between network node NND and network node NNB and the lower weighted of transmission groups connecting network node NNB to end node EN2.

(Underlining and bolding added). Thus, the cited section of *Baratz* describes assigning weights to nodes and <u>adding</u> the weights to determine an optimal route. No parameter is weighted by a weight. Thus, *Baratz* fails to teach anything whatsoever related to "using a routing algorithm to <u>weight a parameter</u> based on a priority value, wherein selecting the path for communication between the source node to the destination node is based at least in part on the <u>weighted parameter</u>" as recited in Claim 17

An obviousness rejection cannot properly be maintained where the references used in the rejection do not disclose all of the recited claim elements. As a result, Appellant respectfully requests withdrawal of the rejection of Claim 17.

B. Claim 18

On page 6 of the Final Office Action, the Examiner states:

> As per claims 18 and 30, as stated above in claim 1, *Chen* further discloses such selection process to select the optimum route based upon RSSI, shortest time, least number of hop, distance, or some other measured metrics but not explicitly a

> mapping value that indicate a degree to which a measured parameter value meets a predefined parameter value. *Baratz* et al. teaches such method (fig. 4, fig. 5, col. 4/ln. 48- col. 5/ln. 53).

The Examiner cites to the same sections of *Baratz* cited in the rejection of Claim 17. Appellant respectfully disagrees. The cited section of *Baratz* fails to teach anything whatsoever related to "using a mapping value to determine a degree to which a measured parameter value meets a predefined parameter value" as recited in Claim 18.

An obviousness rejection cannot properly be maintained where the references used in the rejection do not disclose all of the recited claim elements. As a result, Appellant respectfully requests withdrawal of the rejection of Claim 18.

C. Claim 30

On page 6 of the Final Office Action, the Examiner states:

> As per claims 18 and 30, as stated above in claim 1, *Chen* further discloses such selection process to select the optimum route based upon RSSI, shortest time, least number of hop, distance, or some other measured metrics but not explicitly a mapping value that indicate a degree to which a measured parameter value meets a predefined parameter value. *Baratz* et al. teaches such method (fig. 4, fig. 5, col. 4/ln. 48- col. 5/ln. 53).

The Examiner cites to the same sections of *Baratz* cited in the rejection of Claims 17 and 18. Appellant respectfully disagrees. The cited section of *Baratz* fails to teach anything whatsoever related to "mapping means for mapping said plurality of candidate routes to a plurality of quality of service classes" as recited in Claim 30. Appellant further respectfully submits that neither *Chen* nor *Baratz* even mention a quality of service class.

An obviousness rejection cannot properly be maintained where the references used in the rejection do not disclose all of the recited claim elements. As a result, Appellant respectfully requests withdrawal of the rejection of Claim 30.

V. REJECTION OF CLAIM 12, 16, and 26 UNDER 35 U.S.C. § 103(a)

In section 5 of the Final Office Action, Claims 12, 16, and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chen* in view of *Chuprun*. For the reasons given below, Appellant submits that the Examiner's rejection of Claims 12, 16, and 26 is improper and should be reversed.

As discussed in Section II. above, *Chen* fails to teach, suggest, or describe all of the elements of at least independent Claims 1 and 21. *Chuprun* discloses a "system [which] uses … terrain information and knowledge of network node locations to estimate the quality of node-to-node links in the network (e.g., by estimating path-loss between nodes). The <u>link quality information is then used to determine an optimal connection path between two nodes</u>." (Col. 2, lines 6-11; underlining added). *Chuprun*, however, fails to teach, suggest, or describe calculating or determining a "propagation delay" as recited in Claims 1 and 21.

An obviousness rejection cannot properly be maintained where the references used in the rejection do not disclose all of the recited claim elements. As a result, Appellant respectfully requests withdrawal of the rejection of Claims 12, 16, and 26, which depend from one of Claims 1 and 21.

CONCLUSION

In view of the foregoing discussion and arguments, Appellant respectfully submits that Claims 1-5, 7-21, 23-32, 35, and 36are not properly rejected under either 35 U.S.C. § 102(e) or 35 U.S.C. § 103(a) as being anticipated by or unpatentable over *Chen*, *Baratz*, and *Chuprun*. Accordingly, Appellant respectfully requests that the Board reverse all claim rejections and indicate that a Notice of Allowance respecting all pending claims should be issued.

Respectfully submitted,

Date July 10, 2009

By [signature]

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CLAIMS APPENDIX

1. (Previously Presented) A method of routing a message in a network comprising a plurality of nodes, the method comprising:

transmitting a first message from a source node to a destination node along a plurality of paths, wherein the plurality of paths include a first path, and further wherein the first path includes a first intermediate node and a second intermediate node;

generating a first time stamp and a second time stamp at the first intermediate node, wherein the first time stamp corresponds to receipt of the first message at the first intermediate node and the second time stamp corresponds to transmission of the first message from the first intermediate node to the second intermediate node;

generating a third time stamp and a fourth time stamp at the second intermediate node, wherein the third time stamp corresponds to receipt of the first message at the second intermediate node and the fourth time stamp corresponds to transmission of the first message by the second intermediate node;

calculating a propagation delay between the first intermediate node and the second intermediate node, wherein the propagation delay comprises a difference between the second time stamp and the third time stamp; and

selecting the first path from the plurality of paths for communication between the source node and the destination node based at least in part on the propagation delay.

2. (Previously Presented) The method of claim 1, further comprising:

receiving the first message at the destination node; and

transmitting a second message from the destination node to the source node in response to the first message, wherein the second message is transmitted along the plurality of paths.

3. (Previously Presented) The method of claim 1, further comprising generating a fifth time stamp corresponding to receipt of the first message at a third intermediate node in communication with the second intermediate node.

4. (Previously Presented) The method of claim 3, further comprising calculating a second propagation delay, wherein the second propagation delay comprises a difference between the fourth time stamp and the fifth time stamp.

5. (Previously Presented) The method of claim 4, further comprising calculating an overall propagation delay of the first path based at least in part on a sum of the propagation delay and the second propagation delay, wherein the first path is selected based on the overall propagation delay of the first path.

6. (Canceled).

7. (Previously Presented) The method of claim 5, further comprising calculating a processing delay of the first intermediate node, wherein the processing delay comprises a

difference between the first time stamp and the second time stamp, and further wherein the first path is selected based at least in part on the processing delay.

8. (Previously Presented) The method of claim 1, further comprising:

measuring a signal quality of the first message at the first intermediate node; and

selecting the first path for communication between the source node and the destination node based at least in part on the measured signal quality.

9. (Previously Presented) The method of claim 8, further comprising storing the measured signal quality in the first message.

10. (Previously Presented) The method of claim 1, further comprising:

calculating a distance between the first intermediate node and the second intermediate node; and

selecting the first path for communication between the source node and the destination node based at least in part on the calculated distance.

11. (Previously Presented) The method of claim 10, further comprising storing the calculated distance in the first message.

12. (Previously Presented) The method of claim 1, further comprising:

calculating a velocity of the first intermediate node; and

selecting the first path for communication between the source node and the destination node based at least in part on the calculated velocity.

13. (Previously Presented) The method of claim 1, further comprising:

measuring a power attribute of the first intermediate node; and

selecting the first path for communication between the source node and the destination node based at least in part on said measured power attribute.

14. (Previously Presented) The method of claim 1, further comprising:

assessing a link stability of the first path; and

selecting the first path for communication between the source node and the destination node based at least in part on said assessed link stability.

15. (Previously Presented) The method of claim 1, further comprising:

identifying a quality of service of the first message; and

selecting the first path for communication between the source node and the destination node based at least in part on the identified quality of service.

16. (Previously Presented) The method of claim 1, further comprising:

measuring a first position of the first intermediate node at a first time;

measuring a second position of the first intermediate node at a second time;

calculating a velocity of the first intermediate node using the first position and the second position;

storing the calculated velocity in the first message; and

selecting the first path for communication between the source node and the destination node based at least in part on said stored velocity.

17. (Previously Presented) The method of claim 1, further comprising using a routing algorithm to weight a parameter based on a priority value, wherein selecting the path for communication between the source node to the destination node is based at least in part on the weighted parameter.

18. (Previously Presented) The method of claim 1, further comprising using a mapping value to determine a degree to which a measured parameter value meets a predefined parameter value.

19. (Previously Presented) The method of claim 1, wherein said network is an ad hoc wireless network.

20. (Previously Presented) The method of claim 1, wherein the first intermediate node is a mobile station.

21. (Previously Presented) An ad hoc wireless network, comprising:

a plurality of nodes that form a plurality of paths between a source node and a destination node, wherein the source node is configured to transmit a first message to the destination node along a first path of the plurality paths;

a first intermediate node along the first path, wherein the first intermediate node is configured to generate a first time stamp corresponding to receipt of the first message at the first intermediate node and a second time stamp corresponding to transmission of the first message from the first intermediate node to a second intermediate node along the first path;

the second intermediate node configured to generate a third time stamp corresponding to receipt of the first message at the second intermediate node; and

selecting means configured to select the first path from said plurality of paths for communication between said source node and said destination node based at least in part on a propagation delay between the first intermediate node and the second intermediate node, wherein the propagation delay comprises a difference between the second time stamp and the third time stamp.

22. (Canceled)

23. (Previously Presented) The ad hoc network of claim 21, wherein the propagation delay is stored in the first message.

24. (Previously Presented) The ad hoc network of claim 21, further comprising:

means for measuring a signal quality of the first message;

wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on said measured signal quality.

25. (Previously Presented) The ad hoc network of claim 21, further comprising:

processing means for calculating a distance between the first intermediate node and the second intermediate node;

wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on the calculated distance.

26. (Previously Presented) The ad hoc network of claim 21, further comprising:

processing means for calculating a velocity of the first intermediate node;

wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on the calculated velocity.

27. (Previously Presented) The ad hoc network of claim 21, further comprising:

means for measuring a power attributes of the first intermediate node;

wherein said selecting means is configured to select the first path for communication between the source node and the destination node based at least in part on said measured power attribute.

28. (Previously Presented) The ad hoc network of claim 21, further comprising:

means for determining a link stability of the first path;

wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on said link stability.

29. (Previously Presented) The ad hoc network of claim 21, further comprising:

means for identifying a quality of service of the first message;

wherein said selecting means is further configured to select the first path for communication between the source node and the destination node based at least in part on the quality of service.

30. (Previously Presented) The ad hoc network of claim 21, wherein:

said selecting means is configured to select a plurality of candidate routes;

said network further comprises mapping means for mapping said plurality of candidate routes to a plurality of quality of service classes; and

wherein said selecting means is further configured to select the first path from said plurality of candidate routes based at least in part on a quality of service of the first message.

31. (Previously Presented) A node in an ad hoc wireless network, said node comprising:

means for receiving a message transmitted from a source node along a plurality of communication paths including a first communication path, wherein the first communication path includes a first intermediate node and a second intermediate node;

means for identifying a first time that said message is received at the first intermediate node;

means for identifying a second time that said message is transmitted from the first intermediate node to the second intermediate node;

means for identifying a third time that the message is received at the second intermediate node, wherein the first time, the second time, and the third time are stored in a metrics field of the message;

means for determining a propagation delay between the first intermediate node and the second intermediate node, wherein the propagation delay comprises a difference between the second time and the third time; and

means for selecting the first communication path for communication with the source node based at least in part on the propagation delay.

32. (Previously Presented) The node of claim 31, wherein the first time corresponds to a first time stamp, the second time corresponds to a second time stamp, and the third time stamp corresponds to a third time stamp.

33. (Canceled)

34. (Canceled)

35. (Previously Presented) The node of claim 31, further comprising means for calculating a distance between the first intermediate node and the second intermediate node based at least in part on the propagation delay.

36. (Previously Presented) The node of claim 31, further comprising means for sending a second message to the source node in response to the message, wherein the second message is sent along the first path.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.